Amendments to the Claims

The listing of claims will replace all prior versions, and listings of claims in the application.

1.   (Previously Presented) A satellite communication system, comprising:

a satellite earth station operably coupled to at least one data network; and

a plurality of satellite modems, each satellite modem configured to communicate with the satellite earth station via at least one servicing satellite,

wherein the satellite earth station includes:

a host processor configured to receive data packets from the at least one data network,

a Data Over Cable Service Interface Specification (DOCSIS) Media Access Control (MAC) configured to format the data packets into one or more Moving Picture Experts Group (MPEG) frames,

a satellite modulator coupled to the DOCSIS MAC configured to modulate the one or more MPEG frames based upon a selected modulation scheme from among a plurality of modulation schemes and a selected code rate from among a plurality of code rates to provide downstream output data for transmission to at least one of the plurality of satellite modems, the satellite modulator including:

a plurality of queues, each queue configured to store the one or more of the MPEG frames based upon a modulation scheme and a code rate to provide a queue block of data, the plurality of queues being configured such that each queue corresponds to a possible combination of modulation scheme and code rate among a plurality of possible combinations of modulation schemes and code rates,

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a multirate turbo encoder configured to receive the queue block of data from a selected queue from the plurality of queues and to encode the queue block of data using the code rate associated with the selected queue to provide an inner encoded data block,

a modulator configured to modulate the inner encoded data block using the modulation scheme rate associated with the selected queue to provide the downstream output data.

2.   (Previously Presented) The satellite communication system of claim 1, wherein the data network includes an Ethernet network.

3.   (Previously Presented) The satellite communication system of claim 1, further comprising:

a Reed-Solomon (RS) encoder configured to receive the queue block of data from the selected queue and to encode the queue block of data using the code rate associated with the selected queue to provide an outer encoded data block, wherein the multirate turbo encoder is configured to receive the outer encoded data block and to encode the outer encoded data block using the code rate associated with the selected queue to provide the inner encoded data block.

4.   (Currently Amended) The satellite communication system of claim 1, wherein the DOCSIS MAC comprises:

a SPI controller configured to support at least one downstream;

an encryption engine configured to encrypt the data packets to provide <u>one or more</u> encrypted data packets;

an insertor <u>configured</u> to frame the one or more encrypted data packets in MAC headers to provide encapsulated data packets;

a timing generator configured to insert DOCSIS time stamps in the encapsulated data packets ~~MPEG frames~~ at programmable intervals to provide stamped data packets; and

a formatter configured to format the stamped data packets into the one or more MPEG frames.

5. - 28. (Cancelled)

29.   (Currently Amended) The satellite communication system of claim 1, further comprising:

a serial to parallel interface configured to format the one or more MPEG frames into one or more parallel MPEG frames, the satellite modulator being configured to modulate the one or more parallel MPEG frames based upon the <u>selected</u> modulation scheme and the <u>selected</u> code rate.

30.   (Currently Amended) The satellite communication system of claim 29, wherein the serial to parallel interface is configured to format the one or more MPEG frames into <u>eight parallel MPEG frames to provide</u> a byte wide stream.

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31. (Previously Presented) The satellite communication system of claim 1, further comprising:

a randomize unit configured to randomize the queue block of data from the selected queue to provide a randomized queue block of data, wherein multirate turbo encoder is configured to encode the randomized queue block of data using the code rate associated with the selected queue to provide the inner encoded data block.

32. (Currently Amended) The satellite communication system of claim 1, further comprising:

a block header insert module configured to insert a block header into the [[an]] inner encoded data block.

33. (Currently Amended) The satellite communication system of claim 1, further comprising:

a second modulator configured to ~~module~~ modulate the downstream output data to an intermediate frequency (IF).

34. (Previously Presented) The satellite communication system of claim 1, wherein the plurality of modulation schemes includes at least one of a group consisting of:

quadraphase-shift keying (QPSK); and

8 Phase-Shift Keying (8PSK).

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35.   (Previously Presented)   The satellite communication system of claim 1, wherein the plurality of code rates includes at least one of a group consisting of:

1/2;

2/3;

3/4; and

5/6.

36.   (Previously Presented)   The satellite communication system of claim 1, wherein the multirate turbo encoder is configured to appended one or more tailing symbols (TS) to the inner encoded data block, the one or more tailing symbols (TS) being used to drive the inner encoded data to a known state for proper decoding.

37.   (Previously Presented)   The satellite communication system of claim 1, wherein the queue block of data is part of a plurality of queue blocks of data, the satellite modulator being configured to group one or more of the plurality of queue blocks of data to provide a superframe.

38.   (Previously Presented)   The satellite communication system of claim 37, wherein the one or more of the plurality of queue blocks of data are taken from two or more queues from the plurality of queues, each of the two or more queues from the plurality of queues being associated with a different modulation scheme and a different code rate.

39.   (Previously Presented)   The satellite communication system of claim 1, wherein the satellite modulator is configured to append one or more map messages (PHY-MAPs) to the superframe to provide the downstream output data.

40.   (Previously Presented)   The satellite communication system of claim 39, wherein the one or more PHY-MAPs specify the modulation scheme and the code rate for each of the queue blocks of data from the superframe.